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ON THE PAST PROGRESS
AND
THE PRESENT ASPECTS OF MEDICINE,
IN RELATION CHIEFLY TO THERAPEUTICS.

A N A D D R E S S

DELIVERED BEFORE
THE NORTH OF SCOTLAND MEDICAL ASSOCIATION,
JULY 25, 1874.

"Medicus curat sed Natura sanat morbos."

"Who healeth all thy diseases."

—Ps. ciii. 3.

"L'Organisme se guérit lui-même."—GUBLER.

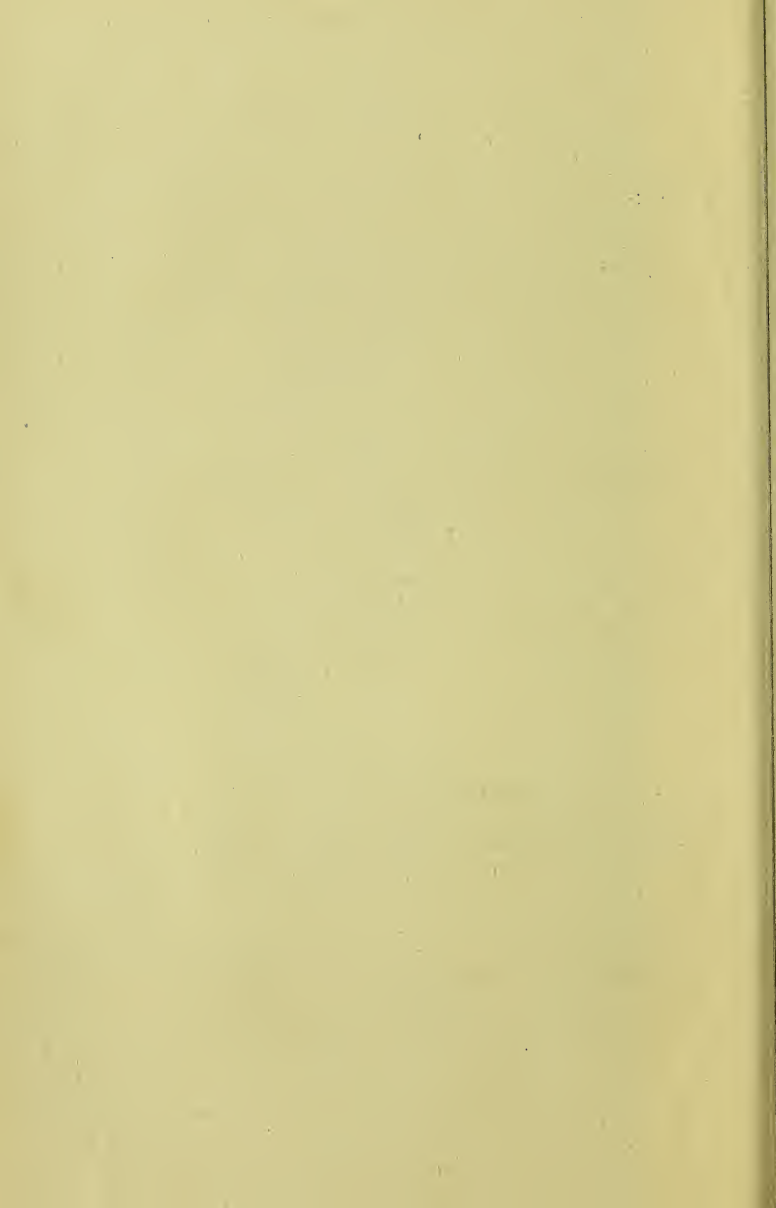
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THE PAST PROGRESS AND PRESENT ASPECTS OF MEDICINE, &c.

GENTLEMEN,—In casting about for a theme whereon to address you, I have had in view the maxim—*ne sutor ultra crepidam*. I have had in view something that has been to me the home of thought for many years—something that I could with some fair degree of confidence adventure upon. I purpose addressing you on the Past Progress and the Present Aspects of Medicine in relation chiefly to Therapeutics. Last year, my predecessor in this chair, Dr Turner, addressed you on a kindred topic—on the Progress of Medicine and Surgery during the past Forty Years. A masterly address it was—happily conceived, happily executed. I shall be content if I do not fall lamentably short of him in the matter and the manner of mine. The subject I have chosen seems to me to chime in well with his, and to be complementary of it.

GENERAL PROGRESS OF SCIENCE DURING THE PAST CENTURY.

But before I break ground, I cannot but bethink me of the French saying—*Réculer pour mieux sauter*. It may be well to cast a passing glance at the progress made in the past in other fields of human thought and human enterprise. We are now within a year of three-quarters of the century now current. Let us add to it the last quarter of the 18th century, and take one continuous period of a hundred years. How fruitful of progress has that century been—of progress in every department of science and art! More has been done in that one century, than was done in all the past ages of the world put together. Marvellous it is to think of! Sir Isaac Newton inferred from the progress made in science and art up to his own time, that the world could not well be older than is commonly supposed. But the grounds advanced by him do not warrant the inference. For, it may be asked, if it took near six thousand years to evolve the steam engine, why may it not have taken twelve thousand, or a hundred

thousand? For the development of the human mind is in the strictest sense contingent, and the discovery of truth in a great measure accidental. That of the great law of gravitation itself by Newton, was due, it is said, to a happy thought suggested by seeing an apple fall from a tree. And there are millions of our race that have been sunk in barbarism from the earliest records of history, and that seem incapable of themselves of rising out of it. Strange indeed, surpassing strange it seems, that "the immeasurable prerogatives of civilisation, with its arts, its science, its philosophy," should be the happy lot of a few only of our species. And yet mind is the same all the world over. Its elements are the same, its inborn energies are the same in all of every race. And yet if we "take the human family, all races, and in all times," we find that "the million, to a few, have lived and perished in the unknowing, the unthinking, the comfortless, and the precarious condition of a savage or of a semi-barbarous condition; certainly destitute of science and philosophy." Enough we have in these considerations to belie Sir Isaac Newton's inference. And what I have remarked as to the discovery of truth being accidental, and the development of the human mind contingent, is very well put by Archbishop Secker, when he says, "Truth proposed is much more easily perceived than without such proposal it is discovered."* What a contrast to the lower animal orders around us! These come at once and of themselves into the possession of all the knowledge, and they acquire at once and of themselves all the skill they need to enable them to act well their part in the world. But this by the way. I have said that more has been done in the one past century than was done in all the past ages of the world—be these many or few. One can name no one branch of human enterprise, in art or science, that has not undergone a marvellous revolution, that has not made a marvellous advance forward.

ADVANCE OF AGRICULTURE AND MANUFACTURES.

Let us take the broad face of the country first—nature in her rural aspects, and this country of Scotland in particular. One that had gone to his rest in the '75, were he now to rise from the dead, and were he to traverse the kingdom in its length and breadth, would scarce know it to be the same country. Roads everywhere in lieu of the saddle roads that existed in his time—

* This is well illustrated in the history of the Cinchona plants, now so indispensable to civilized man. "Had it not been for the casual experience of an uncivilized people, it might never have been discovered that there existed in the stores of Nature a specific febrifuge. Had not the influence of a great religious society (the Jesuits) unconnected with the practice of physic, counteracted prevailing prejudices, this medicine, though brought into Europe, might have remained in obscurity, unknown, and useless. And, lastly, had not physicians been taught by a man whom, both abroad and at home, they vilified as an ignorant empiric (one Talbot, an apothecary), we might at this day have had a powerful instrument in our hands, without knowing how to use it in the most efficient manner."

wider, macadamised roads along the great thoroughfares and good country roads innumerable—and now railways; and everywhere, the everlasting hills alone excepted, the wilderness turned into fruitful fields. Roads, and no less the turnip husbandry whereby cattle could be kept alive during the winter, thorough drainage and subsoil ploughing, guano and artificial manures, together with improved methods and instruments of agriculture, have changed the whole face of the country. Time forbids me dwelling on this. Suffice it to remark that land which a century ago could be bought for a few hundreds of pounds is now in most or in very many parts worth many thousands. A proprietor on Deeside whom I well remember was in the early part of this century not only willing but eager to sell his estates for £10,000. They are now worth over £150,000. In 1792 the Infirmary and Gordon's Hospital jointly bought the fine estate of Towie for £20,000. In 1814, twenty-two years after, they refused an offer for it of £55,000. It is now worth quite £130,000. These are mere samples of the enormous increase in the value of land everywhere in this country within the century. Fortunate were the purchasers of broad acres at the beginning of this 19th century. Happy those proprietors that held fast by their estates, small as the return from them was as compared with the high interest then derivable from gold. This, it seems to me, as being one of the most obvious—patent to all—is perhaps one of the fittest to adduce first. My friend, Professor Dickie, tells me that forty years ago the study of practical or field botany could be prosecuted with satisfaction all about Aberdeen; whereas now it cannot. The plough everywhere has uprooted his botanical gardens. Cowper says:—

“God made the country, and man made the town.”

But since Cowper sang, man may in a very real sense be said to have made the country also. Take, next, another patent and very striking change. Places in this Kingdom of Great Britain, that a century ago were many of them petty towns or villages, or mere hamlets, are now vast towns or cities, busy hives of industry, swarming with human beings, and counting their denizens by thousands for the hundreds that then occupied them. Look even at this our own city of Aberdeen: look, still more, at Dundee, Glasgow, Greenock, Manchester, Salford, Leeds, Birmingham, Liverpool, Birkenhead; and others. Moreover, the population of the whole kingdom has multiplied as it had not done in the five-hundred years preceding; while at the same time, and within the century, our Anglo-Saxon race has been overspreading the globe right hand and left; and within that time it has founded not a few populous and flourishing colonies, giving promise, some of them, of becoming ere long mighty empires. And with this marvellous increase of our population, there has come about a marvellous augmentation of our material wealth and social comfort. This surely betokens much. It bespeaks a mighty progress in science and in art, in manufactures, in industrial pursuits of

all kinds. And while the land has enormously increased in value, the wealth of the towns has become almost fabulously great.

DISCOVERY THE ROOT OF PROGRESS.

To go deeper into the matter and inquire how, or in what way, this mighty progress has been achieved, were beyond the time at my command, and very far beyond my ability. Yet, let me note one or two things. What has been achieved is but the applications of science. "Every science is the foundation of some art beneficial to man." It is the successful prosecution of science that has gotten us the victory over nature. During the century now in view science has been prosecuted as it never was before, and with a success altogether unparalleled in the past history of our race. "It is easy to extend the applications of a discovery once made," easy comparatively. "The discovery is the great difficulty," and it comes often when least looked for, and by a mere chance, or a happy guess. Otherwise, the world would now be greatly more advanced than it is—or would have reached its present stand-point long ages ago. The science which has most of all contributed to the progress we have made is,

CHEMISTRY :

and this science may, in strict truth, be said to have had no existence a hundred years ago. It is precisely one hundred years this year that oxygen was discovered. It was in 1774 that oxygen was discovered by Priestly, and singularly enough it was rediscovered the year following, or in 1775, by Scheele. Singular this, in view of what I have just said, as to the difficulty and the often chance character of discovery. Singular, too, in view of the fact that our modern chemistry had its birth in that discovery of oxygen ! It dates its existence from that epoch. And if we steal but a few years, a ten or a dozen, from the previous *centennade*, and add it to this (as we fairly may) we have the evolution by Dr Black of his theory of "Latent Heat," a theory which in due time, yet within our centennade, culminated in the hands of Dr Black's pupil and assistant, James Watt, in the practical application of steam as a moving and mechanic power of the first magnitude. In 1781, we have the discovery by Cavendish of hydrogen, and of the composition of water. In 1807, we have the discovery by Sir Humphry Davy of the metals potassium and sodium. I have just jotted down two or three of the cardinal discoveries within the century, upon which has been reared the magnificent science of Chemistry—the discoveries that have been the most fruitful of results. This whole science is, in truth, the creation of the century now current. And what has this science done for the world—for mankind all the world over ? Nay, rather, what has it not done ? Try to realise it, for I will not, even if I could, grapple with so large a subject. Yet I may say, with your full concurrence, that it has revolutionised the world, that more than any other it has advanced our knowledge, our civilization, and created our material wealth. And here let me note, in passing, the fact, that this whole science, and what it has given us, and done for us, mankind owes to our

profession. It is beholden to us for it. For long it was exclusively cultivated by medical men, or by men that were introduced to it, as Davy was, and through him Faraday, by means of members of our profession. No doubt, it is now passing more and more into the hands of men that are not members of our body. Yet apart from the College of Chemistry in London, and, perhaps, Owen's College in Manchester, it is still taught, exclusively, or nearly so, in, by, or through our medical schools. And we may well claim, as due to us, the fruits it has yielded. And what and how vast are these !

RESULTS FROM CHEMICAL DISCOVERY.

Take along with Chemistry, as one of its direct fruits, the idea of it got through it and in the study of it, if indeed it be not of its essence—the steam engine—a mere toy till Watt and Fulton, in this century, made it a real power. And such a power! Let it suffice to name it, and in connection with it to name the railroad. Add to the steam engine and to the rail another fruit, if not a creature of Chemistry, electricity and galvanism in the elucidation of their laws, and in their practical applications. They have given us, *inter alia*, the electric telegraph, which has already brought nearly the whole, and ere long will the entire, world into almost instantaneous intercourse. I have said *inter alia*, for the useful applications of electricity (and nationally important ones) are manifest in the arts as well of war as of peace. Take another fruit of Chemistry, photography and its kindred arts. Take another, the whole subject of *spectrum* analysis, and of the solar and stellar chemistry, demonstrating with a delicacy the nicest and a certainty the surest that sun, moon, and planets, our own included, are all made of the same stuff, that in breathing the pure air of the country we are inhaling iron from the sun's rays to incorporate with our blood-corpuscles, and so undergoing a course of chalybeate treatment, millions of miles away from its source. To the steam engine, in the department of the mechanic arts, add—what shall I say—a thousand and one discoveries and inventions made and in use in Glasgow, Dundee, Manchester, Leeds, Birmingham, and elsewhere, not overlooking the United States of America. Add a set of others, born of Mechanics and Chemistry, in the department of war, giving us new ships, new guns, and new powder and shot. Add, as coming within the century, the explorations of Hall, Parry, Ross, Livingstone, and others, and the accruing extensions of our geographical and biological knowledge. Take in also the improvements in the telescope and the microscope, and the revelations of both in respect of the vast and the distant and the most minute of the works of the Creator. Take in also, an entirely new science, the exclusive creation of the nineteenth century—Geology. The list, large as it is, is far from complete. There is the social advancement to be taken into account. This we cannot do more than name. Yet, let us note under this head the abolition, by this country and by the United States, not merely of the hideous curse of the traffic in human beings—the

slave trade—but of slavery itself, save and except as to the latter, in a mild form, it is said, in our possessions on the Gold Coast. No e also under this general head, the inauguration by this country of the principle of free trade in commerce, prophetically foreshadowed by Pope in these lines:—

“The time shall come, when, free as seas and wind,
Unbounded Thames shall flow for all mankind,
Whole nations enter with each swelling tide,
And seas but join the regions they divide.”

THE PAST HALF CENTURY.

It is marvellous the progress mankind has made in every conceivable direction during the century. Nay, more; within the last half of the century, or, say, since the era of the Reform Bill in 1832. The great French war, if in various ways it stimulated progress, retarded it more than it advanced it. But after the needed breathing time, after the needed period of rest and repose, there came about the time I have indicated (1832) a quickening of the European nations—of this nation of England in particular. The moving spirits in science and art, in religion and politics, had thrown in upon them a yeast of fermentation, and ever since, till now, and at this present, there has been no abatement in its working—the yeast has gone on working and working. All these years, since '32, every department has been “filling up its voids.” And we may be well assured, from our experience of the recent past, and from what is going on before our eyes, that such will continue to be the case in the time coming, if only “the light of knowledge, and with it our civilisation are not doomed to undergo extinction.” For this we have no guaranteed security. Yet we may fondly hope that no such calamity—such as befel ancient Greece and Rome and Egypt, and modern Venice, Spain, and Portugal, is in store or us.

THE PROGRESS OF MEDICINE AS A SCIENCE.

To revert now to our own proper science, and its kindred art of healing. Has medicine in any degree shared in the marvellous advancement we have just glanced at? Has it remained in the condition in which Cullen left it in 1784, when he gave us his “First Lines of the Practice of Physic,” or in which John Hunter left it in 1794, when he died leaving us his posthumous “Treatise on the Blood.” It is from these two men and their works we must start in any review of the progress of medicine in Europe during the century now in our view. Hunter gave the impulse in Physiology, human and comparative, and in Pathology; Cullen in Nosology and Practical Medicine. It were difficult, and it would be invidious to compare and contrast these two great men. To Cullen, however, we owe much more than is at all well known. Apart from what he did in helping on the progress of medicine, it is at least an open question whether we are not indirectly beholden to him for the steam-engine, and all that the steam-engine has brought us. For while Watt caught the inspiration of it from

Black, whose pupil and assistant he was, Black was taught his chemistry at Glasgow by Cullen. And Cullen it was who turned the thoughts of Black to the subject of "Latent Heat."

"What great events from small beginnings rise."

And what if but for Cullen, the thoughts that "culminated in the steam engine," had never arisen in the mind of Black or of Watt? For, as we have seen, truth proposed is much more easily perceived, than without such proposal it is discovered. Why was not the steam engine invented by Archimedes, or sometime before this nineteenth century? But, to proceed: it is not likely, surely, that the men that gave us our modern chemistry—medical men—should lag behind in their own more immediate sphere. Nor did they, as you all know.

GREAT NAMES IN THE PROGRESS OF MEDICINE.

I am not going to give you a history of medicine during the century, or from the time that Cullen and Hunter departed this life, yet I must glance at a few points in that history. It is scarcely possible to estimate aright what those men did for medicine, each in his own way. Each did immense service in his own line. Hunter was the man of more original genius, Cullen of higher and more varied culture. Cullen taught anatomy, chemistry, institutes, materia medica, and practice of medicine, and was thus well versed in all the fundamental branches of medicine. He left his mark on every one of them. But the works by which he most advanced the science and the practice of medicine are his "Materia Medica," his "First Lines of Practice of Physic," and his "Nosology." I have said "most advanced," yet let me note here that he also *retarded* in some measure the subsequent progress of medicine. For he did both, retarding it most by his truly admirable "Nosology." Yet were one to ask in what way he most contributed to its advance, the answer should be, in the words of Dr Bostock, that he did more than any of his contemporaries or predecessors to "sweep away the rubbish of antiquity"—that thick mass of rubbish that had so long lain as an incubus on the minds of the faculty. Bichat, in France, must be named next in connection with Cullen and Hunter. Born in 1771, and dying in 1802, at the age of 31, he gave the next, and an independent, and a prodigious impulse to medical science. He probably knew little of Hunter and Cullen except by name. He opened up new lines of thought and of research, and was the founder of an entirely new school, which may be said to be that of the present day. It is quite astonishing to think of what he accomplished within a life time so brief, dying at an age when most of us are like the man in the gospel, cured of his blindness, only beginning to "see men as trees walking." His *Recherches Physiologiques sur la Vie et la Mort* was published in 1800: his *Anatomie Générale*, in 1801. By these works he breathed an entirely new spirit into our science, and widened greatly the scope of research in it. He comes in succession to Hunter rather than to Cullen, though his writings link him

with both. We must take Meckel next in close natural succession to Bichat, and then the truly great Baron Cuvier. Cuvier, indeed, was not a member of our profession. But he advanced it largely by his herculean labours in the departments of comparative Anatomy and Physiology, and Zoology. Later on, we must take in Sir Charles Bell; and perhaps Mayo and Marshal Hall. Bichat, Meckel, Cuvier, and Bell were the foremost men in the departments mentioned, and mighty men they were. Aided they were by men of lesser note: but they outshone them all. In the departments of Pathology and Practical Medicine, we may start with Matthew Baillie, John Hunter's nephew and pupil, as treading on the heels of Cullen, and bringing prominently into view what Cullen knew little of, the revelations of Morbid Anatomy. This important branch was from the time of Baillie's work on that subject in 1795, prosecuted with great zeal in France and Germany—England not excepted—yet France taking the lead. Vast good came of the labours of the morbid anatomists. Greater precision was imparted to our knowledge of diseases. Some ill consequences attached to the good done in this sphere. For with not a few, morbid anatomy came to be held as the equivalent of pathology, or as synonymous with it; and by such disease was regarded as essentially of organic origin. This error—a capital one it was—we have now in a great measure, or wholly, got rid of. In the department of practical medicine, or what is now happily designated “The Natural History of Diseases,” or their “Clinical History,” little was done, or little comparatively, for several years after Cullen passed away, or what was done did not appear on the surface, or so as to leave its mark on this department. I have said that in some respects Cullen rather retarded than furthered progress in this direction. His “First Lines,” but above all his “Nosology,” tended to stereotype the notions as to disease of his more immediate successors, and to make them regard diseases as positive or specific essences. Yet in France, peradventure in Germany also, and certainly in Great Britain and Ireland, there were workers in this field, men working under the inspiration of Bichat and moved by his spirit. There were in the earlier part of the present century, Blackhall and Bateman, and Hastings and Carswell, in England, Percival and Cheyne, and Graves in Ireland, and Andrew Duncan, and Abercrombie, Alison, and Christison in Edinburgh, and others besides in the three kingdoms, advancing our knowledge of fever and inflammation and other forms of disease, in the general and in detail. In 1827, there came the revelations of Bright on kidney disease and on dropsy, a revolution in itself and the harbinger or starting point of other revelations in pathology and practice. On the Continent—in France especially—there were Louis, and Andral, Cruveillier, and others, working assiduously in their respective spheres, filling in voids in morbid anatomy, pathology, and practical medicine. But the name in France, and of that period, that transcends all other names in this field is that of the immortal Laennec. It is scarce possible

adequately to set forth what Laennec did for the lungs and heart. The invention of the stethoscope, incomparable instrument, and of percussion and other modes of physical investigation, is in one sense but a small part of the contributions made by Laennec to the science and practice of our art. Almost single handed, and within the brief space of twelve years, he worked out the pathology and clinical history of diseases of the heart and lungs—the latter especially—as they had never been before. And what he did paved the way to other excellent work in other hands. Laennec and Bright are the two stars at this stage of our review. And here I pull up.

LATER PROGRESS.

What I have referred to may be said to have been accomplished prior to the period before adverted to as the period of quickening—the era, namely, of the Reform Bill. A great work, indeed, had already been done. But we ought to regard it as the earnest of what has been done since and which Dr Turner so admirably sketched out in his address last year. It were impossible for me within the time allowed me to grapple with the history of research in medicine during the last forty years. But this I hope I may say without offence, as regards this whole kingdom of Great Britain—leaving Ireland out of view, lest I should raise the cry of “Justice to Ireland,” on the part of its highly-sensitive people—that while prior to 1840, Edinburgh took the lead in many ways in the advancement of progress, London has since been the busy and fruitful hive of work. Up to the period I have named, what had been done in physiology, and in pathology, and in practice of medicine was scarcely to be had embodied in a systematic form or shape. It lay scattered in journals and in monographs. We had no systematic works of any note on any of these branches. We had Bostock’s Physiology, indeed; Mayo’s, and Majendie’s; and in medicine we had Dr George Gregory’s Practice. But it was universally felt that these works did not supply the want then experienced, especially by the younger members of the profession. In 1831, however, Dr Alison gave us his “Outlines of Physiology,” and in 1833 his “Outlines of Pathology,” with copious heads of Lectures on Therapeutics. Alison was not a discoverer, albe t he did good service in many ways, as if he had been, in all these departments. His great merit lay in the extent and accuracy of his information, in his natural sagacity, his wide general culture, and his philosophic spirit. He was eminently imbued with the spirit of Haller, Bichat, and Cuvier. He knew how to estimate aright the relative values of things—to discern between the essential and the incidental. In those two works, he gathered up and set forth in order, and comprehensively, the information that had been accumulated, and especially the principles that had been established since the days of Cullen and Hunter. In physiology, he was for several years the acknowledged authority. He contributed much indirectly to our knowledge of it in many ways, and he paved the way to progress in it. To him, in this country

at least, is unquestionably due the merit of being the first to establish both the reality and the importance of a moving power in living organisms not dreamt of by either Hunter or Cullen—a power by which the movements of the blood and other fluids in the minute vessels and the cellular tissues of plants and animals are determined, independently of the heart or other moving solids—a power dependent on the vital processes of nutrition and secretion going on in them and arising out of them. He was the first to show how large a part that principle of movement plays in the morbid as well as in the healthy processes of nutrition and secretion. He it was that on this ground overthrew the old theory or theories of inflammation, and elaborated the theory now received. The generalisation now referred to was a large and an important one. It was the addition to Physiology and Pathology of a new foundation-principle. Of his “*Outlines of Pathology*,” with the Appendix on Therapeutics, it is scarce possible to speak in too high terms of commendation. It may, in truth, be said to have done for the age in which it appeared (1833) what Cullen’s “*First Lines*” did for his. Fifty years, save one, had meanwhile elapsed. Some systematic work was needed to gather up into one the fruits that had ripened in the interval. Those *Outlines* supplied the want admirably. The article, *Inflammation* in that work, subsequently more fully treated of in Tweedie’s “*Cyclopædia of Practical Medicine*,” was on all hands allowed to be a masterpiece. Eleven years afterwards (1844), he gave us his admirable “*Outlines of Pathology and Practice of Medicine*.” This was the crowning act of his life. It was the counterpart, after an interval of sixty years, of the “*First Lines*” of his predecessor in the same chair—Cullen. This, his last work, never received the attention it deserved. But there was an obvious reason for this. His “*Outlines of Pathology*,” published eleven years before, together with his therapeutic and clinical teaching in the University of Edinburgh, carried on there for many years, had, in the interval, found a fitting and more popular expression in the *Lectures on the Principles and Practice of Physic* of Dr, now Sir Thomas Watson, of London, the friend and pupil of Alison. Whether Watson’s lectures could have been written but for those *Outlines* and the academic teaching of Alison, I will not venture to say. One at least familiar with both will see Alison reflected in almost every page of Watson. I have referred to Cullen’s relation to Watt in the matter of the steam engine, and to Archbishop Secker’s memorable dictum as to the difference between perceiving a truth propounded and the discovery of a truth. And what if we are indebted for Watson’s inimitable lectures to Alison’s comprehensive and philosophic *Outlines*, and his class teaching? Anyhow, Alison’s “*Outlines of Physiology*” and his “*Outlines of Pathology*,” viewed historically and in the light of the science of the day, still mark an epoch in British medicine. So also do those lectures of Sir Thomas Watson, first published some time about 1840. Inimitable I have said they are. A well of English undefiled they are. With what delight were they hailed

by the profession! They gathered up and gave completeness to what before lay scattered abroad and was inaccessible to the aggregate of our body. For them, Alison's Outlines embraced pathology only; and they were deep, condensed reading, as Butler's Analogy is. Watson's Lectures embraced practice also—were copious, brilliant, fascinating. The publication of these lectures marked, I have said, a new epoch in medicine, strictly so-called. It supplied a want long felt. It gave a vast stimulus to workers in this particular field; and while—improved on each revision—these Lectures still hold their ground as firmly as at the first, they have tended greatly to the advancement of pathology and practical medicine. And here let me just note in passing, under this head of systematic medicine, that within these few years the United States, in the person of Dr Austin Flint, have given us a work of equal excellence with Sir Thomas Watson—a work which has already gone through four editions; and that, last year, Dr Frederick Roberts, of London, has given us a work on Practice of Medicine of singular excellence. It does not lie to my hand to speak of the progress made in surgery, midwifery, and medical jurisprudence. It must suffice for me to remark that they have in no degree lagged behind. As far as principles are concerned, and in as far as they stand related to those of physiology, pathology, and therapeutics, they have advanced with the sister branch of medicine proper. And now, to come to the main part of my address. What we have specially gained in pathology and practice since Sir Thomas Watson came on the stage, thirty years ago, and as well in surgery as in medicine, is the thorough working out of

THE NATURAL HISTORY OF DISEASES.

This is a term never heard of in my student days forty years ago. Yet it is a happy one. We now know, as we did not know fifty years ago, the whole habits or habetudes of diseases, their causes, and the operation of these, the course or progress of diseases, the modes in which they terminate, whether favourably or unfavourably, in death or recovery; the modes, too, of dying, and the modes of healing, and all this as occurring spontaneously. A great gain this has been and is. It is so especially in relation to the proper subject of my address—to the scientific and rational treatment of diseases. Dr Flint well remarks that "the knowledge of the natural history of diseases is the true point of departure for Therapeutics." But this is not the only gain we have made since the days of Cullen. We have acquired juster notions of what disease is—of what diseases are—and of the relation in which they stand to health. Dr Cullen, as I have said once and again, by sweeping away the rubbish of antiquity, and in other ways besides, did more for our science than any that went before him. Yet he did not a little to retard it also, and especially by the publication of his Nosology in 1785. But how? This work, admirable in itself for the clear, concise, accurate definitions it gives us of diseases, served, not indeed to create, but to keep up

and to rivet false notions as to diseases in the abstract, and as to individual diseases in particular. It made us think of diseases as entities. This notion of diseases got fixed in the professional mind, and it worked mischief in the all-important department of therapeutics and practice. It led us to look to material drugs for the cure of material entities, of morbid individualisms. It is amusing the laboured efforts of the older writers to define disease in the abstract so as to make the definition fit into the pathological entity, and square with it. Now, "physiological pathology" (a new term this, and a happy one) and the working out in detail of the "natural history" of diseases, has set us on a new ground altogether. They have led us to look upon the two states of health and disease as being in a real sense only one state—as modifications merely of one and the selfsame condition of the living organism. The Cullenian notion of disease led to the curative powers of nature being overlooked and in great part disregarded. Disease being looked upon as an entity—a substantive something of a tangible nature, so to speak, extrinsic to the economy, foreign to it—that had got into the system somehow (like an evil spirit), was to be expurgated from it as by a pitchfork, of which pitchforks the materia medica was full. Health and disease, instead of being regarded as relative states of the one living body, stood out to the eye of the profession as positive and diametrically opposite entities. We now know, we have come to realise this—namely, that health and disease are, simply, relative or related states of the living body—relative modes of action of its vital powers—relative manifestations of its vital actions. In both health and disease it is the same powers that are concerned, the same actions that ensue, the same phenomena that appear—normally, we say, in the one case, abnormally in the other; the normal and the abnormal, however, passing so gradually the one into the other, and back again so gradually from the one to the other, as to nullify all attempts rigorously or logically to define either.

WHAT IS DISEASE?

The living body is so constituted as to *tend* always to act conformably to the manner intended by nature. When so acting, the state of health obtains. The living body, however, is so constituted, as to be *liable*, on occasions, to act otherwise; and this, equally with the other, is a law of its constitution. When thus deflected—when thus acting in an adverse direction, and to such an extent, or in such a way, "as to cause suffering or inconvenience," pain, distress, discomfort. "or endanger life," then, we say, disease obtains. Note how little, etymologically, is comprised in this word—*disease*. Disease is simply the want or abnegation of ease. *Malaise* it is in French. A headache, or a mote in the eye, puts us ill at ease or out of ease. Where or how shall we draw the line between a common headache that will pass off after a night's rest, and the headache that is the precursor or concomitant of an acute meningitis that shall be fatal? or where

the line between the congestion in the eye, caused by a mote under the eyelid, entailing much, yet temporary dis-ease, and that which is the accompaniment of a purulent ophthalmia that will end in the destruction of the eyeball? Again, the circumstances in which the body is placed are for the most part in harmony with its natural constitution, and with the appointed modes and ends of its actings. They are such as to make and keep us easy, to live and to enjoy life. Nevertheless, they are also such that they may, as they often do, act injuriously on the system. The sun's rays, which impart warmth to the atmosphere, and give us a temperature conducive to life and health and ease, are sometimes so intensely hot as rapidly to induce, as in India, fatal collapse and stupor. So also the air we breathe, and without which we cannot live, impinging on our bodies in a cold current, may cause a pleurisy that shall end fatally. So true is it, that the most general, the most widely diffused, the commonest of the external or existing causes of our diseases, are those that "result from the very conditions of our existence." The states of health and disease, therefore, are not distinct and definite things or entities, the "characters" of which may be given, as those of aconite and calumba are in the pharmacopœia. They are not diametrically different, distinct things like these. They are not fundamentally opposite the one to the other. In all cases disease is primarily an affection of vital power, modifying vital action, and showing itself in a modification of vital phenomena. Yet it is an affection, modification, and manifestation of the same phenomena, the same actions, the same powers that are proper to the living body, and which, when acting and manifesting their action naturally, constitute the state or condition of health. Those vital powers may be very variously affected, and within an exceedingly wide range, without any real departure from health or ease. But this allowed for—as it must be—the state or condition which we call disease, and which it is the province of pathology to investigate, implies no affection of any new or additional powers—no modification even of actions or of phenomena other than those that attach to the state of the health. And the clear conception we now have of the true relation in which the two states of health and disease stand towards each other, while it has led to a better appreciation of what they both are, has shown us how futile it is, and ever must be, to define them otherwise than in very general and purely relative terms. Formerly, as I have said, we were too much in the habit of looking upon diseases as entities, as distinct specific things or existences. Nor have we yet fully set ourselves free of that notion. Such and so great is the deceiving influence of words on the imagination: "*Pu aut homines rationem suam verbis imperare; sed fit etiam ut verba vim suam super intellectum retorqueant.*" Diseases have no separate or independent existence. They are merely modifications of sound states of the living organism. Now, and in relation to the proper subject of my address, let me here remark, that looking at diseases in the

way we did formerly, or as entities, we were led to think of remedies as antagonisers of morbid actions—counteracting diseases directly as entities—just as water extinguishes fire, or as potash neutralizes an acid.

SOUNDER NOTIONS OF DISEASE LEAD TO SOUNDER METHODS OF TREATMENT.

Concurrently with the larger and sounder notions we have thus acquired as to the nature of diseases and the relation in which they stand to health, we have acquired also larger and clearer notions on two other points, namely—first, the nature of the curative powers and provisions of nature ; and, secondly, the inherent efficacy of these independently of art or human intervention ; while, in the treatment of disease, we have come to rely much more than we did formerly on those curative powers. As to these curative powers, that is, the curative powers of the living organism, we now see that they are in no sense or degree other or different powers than those by which our very life and health are sustained from day to day. The older writers entertained vague and erroneous notions on this point. Stahl especially did so. Yet so also did Cullen and Hunter. Stahl regarded the *Vis Naturæ Medicatrix*, or the *Autocrateca* as an attribute of the human mind, and an intelligent principle. Cullen and Hunter did not go this length, yet they regarded it as a power *seu generis*, inherent in the animal economy. Vague their idea of it was, or hazy, not always the same in every part of their writings. This power, however, this *Vis Medicatrix Naturæ*, we now know is not a power *seu generis*, or an independent power, superadded to our ordinary vital powers, in abeyance when we are well, and coming into play only when we fall ill. Were this the case, we should have (clearly) an exact criterion whereby to distinguish between health and disease. Moreover, in that case health and disease would be (clearly) two distinct things. By the expression curative powers of nature, we only indicate the fact that the powers by which our life is upheld from day to day, and by which our health and vigour are conserved, are adequate also, within certain limits of course, yet very wide limits, to effect our restoration to health. Life, indeed, bespeaks not disease only, and recovery from disease, but death also. The powers by which we come into existence as an embryonic-microscopic cell, grow in the womb for a time, and advance through infancy to childhood, and from this to manhood, include also, as a necessary-inevitable result, our decline and death. "*Nascentes morimur; finisque ab origine pendet.*" Born to live, we are also born to die. Our end in death attaches to our entrance on life. The conditions of our existence are also—or they involve—the conditions of our death. "Our very life," it was finely said long ago by Jeremy Taylor, in anticipation of Dr Carpenter, "Our very life is but a succession of dying. Every day and hour wears away part of us ; and as far as our life is already spent, so far we are already dead and buried." The conditions of our health are in

the main the conditions of our dis-health, and of our recovery from it. Life and health, disease and recovery, disease and death, all hang together. They involve the exercise or the cessation of one and the self same set of vital powers.

WHAT HAS BEEN ATTAINED.

All this we have come to apprehend within the century now current as we did not apprehend it in the days of Cullen and Hunter. And it is much. Yet it was the last to be learnt clearly. It is an outcome or a product of the knowledge we have acquired of physiology:—More immediately it is a product of the knowledge we have acquired of the whole natural history of diseases, showing us their habitudes and the modes in which, independently of art, they terminate favourably or unfavourably, in health or in death, or in a state of chronic permanency for the residue of life. I have said it was the last to be learnt. Last year Dr Turner dwelt fully and admirably on the progress made in this direction. It is interesting, and withal in the highest degree instructive to read the record of progress as we have it in successive editions of Sir Thomas Watson's Lectures—from the first edition to the fifth. It were unjust not to credit Dr Hughes Bennett of Edinburgh with having contributed most, and greatly more than any other single member of our profession, with the revolution that has taken place in therapeutic opinion and medical practice. And the late Sir John Forbes deserves honourable mention in this regard. The homœopaths, too, have lent their aid, albeit not in a scientific sense. They have shown us that nature unaided, or aided by nothing more potent on the side of art than the use of drugs so infinitesimally sub-divided as to be reduced to an absolute non-entity—so infinitesimally attenuated as to be reduced to absolute inertness, is herself competent to the cure of all, or almost all, diseases that are intrinsically curable.

CONCLUSION.

I have only a word or two more to say. My performance may seem to some of you to have belied my promise. So far it has to myself. I have in one sense only yet got to the beginning of my subject. Heretofore I have dealt only with what may be called the *prolegomena* of my subject. I have said nothing of the Therapeutics of the *Materia Medica*. I have said nothing of Bloodletting, Calomel and Opium, Chloroform, Chloral, the Bromides, &c. This, indeed, I did not intend to do. But I meant to go into the foundation-principles of the *Vis Naturæ Medicatrix*, and the modes and the processes of healing as carried on by her. And I meant also to indicate the bearing which our knowledge of these curative powers of nature must have on any system that may be constructed of applied Therapeutics, and the fallacies arising out of the exercise of these powers that attach, and ever must, to the estimates we form of the remedial efficacy of drugs. Time will not admit of this. Let me just observe in regard to the curative

powers of nature generally, that it is in the recognition of these powers, to an extent not known or thought of in Cullen's days, that progress in Therapeutics has been largely made during the past forty years ; and that it is the thorough appreciation of these powers, and the reliance we now largely place in them, that characterises the practice of the present day.

DR ALISON'S AND M. GUBLER'S THERAPEUTIC TEACHING.

But without detaining you beyond a few minutes longer, I should wish to put before you a brief general expression of those powers, and of the relation they bear to any system that may be devised of applied Therapeutics. Dr Alison was unquestionably one of the first to break fresh ground in this department, to call attention to the ambiguities and the erroneous views of Cullen, to inculcate the importance of the powers now in view, to illustrate their modes of action, and to point out their bearings on our estimate of the efficacy of extraneous curative agents. It stands out conspicuously in all his writings ; and it formed the subject of his inaugural thesis on occasion of his graduating in medicine. The title of his thesis was "*De Viribus Naturæ Medicatricibus.*" (1811.) Passing him by, meanwhile at least, I would fain bespeak your attention to the pregnant words on this whole subject of M. Gubler, Professor of Therapeutics, in the *Ecole de Médecine*, of Paris—the successor in that chair of M. Trousseaux. One would think that Gubler had sat at the feet of Alison, and was reflecting his teaching. So identical in principle, and in some parts even in expression are the views of both. And yet it is probable, that Gubler knew of Alison only by name—if so much. M. Gubler's views are contained in the preface to his work, published a few years ago, designated, "*Commentaires Therapeutiques.*" "*L'organisme se guérit lui-même.*" The living body is its own healer. The living body itself when diseased cures itself. "*Le médecin ne fait que le placer dans des conditions favorables au retour d'un mode de fonctionnement régulier.*" The physician only places the organism in a condition conducive to its return to health. The former is what M. Gubler claims for nature unaided—an inherent curative power. The latter is all he allows the physician to claim in behalf of his appliances. Nature is herself competent to the cure of all diseases that are curable. Moreover, she is the true healer of them. The physician does but aid her in her curative efforts. But let us see what Gubler precisely means when he thus speaks of the physician. For the physician let us substitute his appliances, his drugs, his *materia medica*. A medicament, a drug, M. Gubler says, is simply a modifier of an organ or its function. It is by no means an antagonist of morbid entities. Such entities have no existence in nature. Diseases are only modifications of natural actions. Drugs, accordingly, are only modifiers of modifications of natural actions. Another, and a very important point with Gubler is this:—Drugs, he says, act on the living organism precisely in the same way in health as they do in disease. They have not one action in health—another action in

disease. It is the same action they exert in both. Their physiological action is the same in disease as in health. It is incorrect, he affirms, to speak of the therapeutic action of a drug. It has only one action—a physiological action. It is through this action that it exerts a modification of diseased action on the organism. When applied to this end it is put to a therapeutic use—*i.e.*, a curative use. Its therapeutic use is but a curative application of its physiological action. *Voilà tout.* We have, he says, no “anti’s” in medicine, albeit we continually speak as if we had—*anti-spasmodics, anti-phlogistics, &c.* As a drug is simply a modifier of morbid action, and in no sense an antagonist, so we have no anti’s. Nor is it correct to speak of a drug as a therapeutic agent. It does not cure because it neutralises certain acts, as an acid does an alkali. All it can do is to place the system at large or a part of it in the most favourable condition possible to enable it of itself to regain its lost balance. This done, the cure effects itself. Without the drug, indeed, or independently of it, the cure might effect itself. But the drug does no more than aid the living organism to effect its own cure. “*L’organisme se guérit lui même.*” Such, in brief, is Gubler’s teaching. The application of it to our system of applied therapeutics, and to our *materia medica* in detail, I cannot now enter on. But you will be able, from the exposition I have given of it, to take in this further affirmation of M. Gubler, namely, that our future work in this department, as in the department of practical medicine, “is less to discover new data, than to systematise and arrange old ones alongside established physiological laws,” and agreeably to this *se guérit* of the living organism. One word in conclusion, and in behalf of M. Gubler’s therapeutic views. They are, as I have said, identical in principle, and in many respects in expression with those taught by Dr Alison, forty years ago, in the University of Edinburgh, and as set forth in his outlines of Pathology and Practice of Medicine, published thirty years ago (1844), nay, in his Inaugural Thesis in 1811 “*De Viribus Naturæ Medicatricibus.*” One word as to what Alison taught, and, although dead, still teaches. Our drugs—our remedial agents—he says, in diseases that admit of cure, “are only auxiliary to the provisions of nature for the spontaneous cure of diseases, or their spontaneous decline.” “They are incapable,” he further tells us, “of arresting the course of morbid actions.” Nevertheless “they can frequently modify them—(modify them, this is Gubler’s expression)—and counteract those changes which, in the circumstances of individual diseases, are most immediately dangerous to life.” But how modify them? Here, again, in answer to this question, we shall find Alison and Gubler at one. How modify them? By an influence, he says, exerted by them on the living body, during its diseased states, which we think capable of explanation by what we know of the operation of the same agents on the healthy body. This makes it necessary, he observes,

to inquire into the real nature of the change which a remedy can effect on the body, that is, as to its mode of action. And this requires our inquiring into what is called its "physiological action," or the mode in which it affects the healthy body. The knowledge thus acquired—*i.e.*, of its physiological action, taken along with our knowledge of morbid actions themselves, and when we have reason to believe that these morbid actions are of such a nature as to admit of being directly or indirectly modified by the remedy—will often enable us to draw an inference, with more or less confidence, as to its real efficacy in averting morbid changes, or successfully counteracting them, or promoting their favourable termination. So much for Alison's views. They are identical in spirit and in substance—almost in expression—with Gubler's. Did time permit I would offer some suggestions arising out of the views now put before you of those two men. Let me just say that I cordially accept them as my own therapeutic beliefs. And submitting them as worthy of all acceptance, I would place alongside of them, as complementary of them, Dr Cullen's memorable injunction in the treatment of disease—"to obviate the tendency to death"—counteracting which is often in our power, and is often all that is needed to fulfil "the whole duty of man" incumbent on us as medical men, nature doing the rest. "*Medicus curat, sed natura sanat morbos.*" This apothegm expresses, I believe, the spirit of our modern practice. Yet underlying it, and with a more conservative system of treatment, and a large trust in the powers and the provisions of nature, we have of late years made vast acquisitions to our therapeutic resources, and have attained to greater precision in our use of them. If our office be but the humble one of aiding nature, we can yet boast of having learned during the current century to aid her to an extent unknown when Hunter and Cullen went to their rest. In chloroform, the bromides, chloral, and I believe in the Calabar bean and not a few others, we have mighty weapons for good to mankind. And not less in the hypodermic injection, not of morphia only, but of other articles of the *materia medica*. This instrument of good is coming daily to be more and more appreciated, as it deserves. And, as the author of it, Dr Alexander Wood, of Edinburgh, has earned for himself the everlasting gratitude of mankind. Chloroform has won for itself a baronetcy in the person of the late Sir James Y. Simpson. The "Hypodermic" (I will venture to affirm) is not undeserving of one.

